

# Atlantic Richfield Company

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June 9, 2017

Ms. Lynda Deschambault  
U.S. EPA Region 9  
75 Hawthorne Street (SFD-7-2)  
San Francisco, CA 94105

## **RE: Leviathan Monthly Report for May 2017**

Dear Ms. Deschambault:

The following text describes activities conducted during the month of May 2017 at the Leviathan Mine Site (site) and activities anticipated to occur during the upcoming month. These activities are organized by work area [Aspen Seep, Channel Underdrain (CUD) and Delta Seep (DS)], and site -wide tasks. This progress report is being submitted in accordance with Paragraph 6 – 2 of the Administrative Settlement Agreement and Order on Consent for Removal Action (AOC) (effective January 21, 2009).

## **ACTIVITIES FOR MAY**

### **Aspen Seep**

- Operated the Aspen Seep Bioreactor (ASB) Treatment System in recirculation mode for the month of April except as noted below. A limited access season (LAS) site visit to the ASB Treatment System was completed on May 12, 2017. The influent and effluent compliance sampling results are presented in Table 1. Recent influent flow rate, pH, and ORP field data are summarized in Table 2. Flow data received will be included in subsequent monthly reports.
  - On May 12, 2017, the ASB had a brief power system shutdown lasting less than 90 minutes. Upon detection, the site generators were restarted and the system was restored into recirculation mode. During the power outage, the Aspen Seep flow still traveled through Pond 3 and Pond 4. The effluent samples collected on May 12, 2017 showed no discernible effect on effluent water quality.
- Deliveries of Sodium Hydroxide (NaOH) were completed on May 4 and May 16, 2017.
- On May 11, 2017, a generator engine was replaced that was removed in October 2016 for warranty repairs.

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- Due to higher than normal flows, solids accumulated in Pond 3 were transferred into Pond 4 on May 18 and May 19, 2017. In preparation for transferring solids from Pond 3 into Pond 4, the water level in Pond 4 was lowered by removing planks at the effluent launder May 12 through May 17. Removing solids from Pond 3 reduces the likelihood of solids being transferred into the pretreatment pond and the biocells via the recirculation system. During solids transferring on May 18 and May 19, 2017, the recirculation system and Ethanol dosing were stopped but treatment through the ponds including pH adjustment with NaOH dosing continued.
- On May 20, 2017, the ASB had a power system shutdown. The power shutdown alarm was discovered May 22, 2017 and system power was restored. The ponds were not discharging during most of the power outage as the ponds were planked up while finalizing solids management. During the power outage, the Aspen Seep flow still traveled through Pond 3 and Pond 4. The pH of the effluent was measured at 6.51 when the power outage was discovered. In order to increase retention time, Pond 4 was planked up until parameters were optimized prior to discharge.
- On May 26, 2017, load bank testing was completed on the propane generators.
- On May 31, 2017 , Ponder was onsite to transfer accumulated solids in the pretreatment pond into Pond 4 using a vacuum truck. During solids transfer, Pond 4 was planked to restrict ASB Treatment System effluent from discharging. The recirculation system and Ethanol dosing were stopped, but treatment through the ponds including pH adjustment with NaOH dosing continued. ASB Treatment System discharge was secure until June 1, 2017 when the discharge parameters stabilized.

### **CUD and DS**

- On May 11, 2017, Atlantic Richfield started collection and conveyance equipment at the CUD and DS. Following stabilization of water quality parameters, Atlantic Richfield began discharging treated water from the HDS Treatment System later that same day . Between May 11, 2017 and May 31, 2017, the HDS Treatment System operated between 100 gpm and 70 gpm.
- Atlantic Richfield provided EPA updates via email regarding the startup of the HDS Treatment System and discharge to Leviathan Creek on May 11, 2017.
- Flow rates recorded for the CUD and DS are included in Table 3. A summary of the HDS Treatment Plant operational data for May 2017 is presented in Table 4.
- Compliance sampling was completed on May 12, 2017, May 17, 2017 and May 25, 2017 for the HDS Treatment Plant. Analytical results from the available sampling event are presented in Table 6. The results from the May 17 and May 25, 2017 sampling event will be included in subsequent monthly reports.
- On May 12, 2017, the HDS Treatment System went into Recirculation Mode for approximately 11.5 hours following a high effluent pH interlock trip. The pH probe in the reactor tank drifted out of calibration resulting in additional lime dosing. On May 13, 2017, weekend operators were able to calibrate the reactor pH probe and restarted the plant in recirculation mode. Discharge to Leviathan Creek resumed on May 13, 2017 once effluent surrogate parameters were stabilized. Capture and conveyance of the CUD and DS was not interrupted during this event.
- On May 19 and May 22 , 2017, power interruptions caused the HDS Treatment System to fault. Each fault caused the plant to shut down for less than five minutes. Power was restored through automatic transferring of generators, but HDS Treatment Plant was restarted in recirculation mode.

Discharge to Leviathan Creek resumed once effluent surrogate parameters were stabilized. Capture and conveyance of the CUD and DS was not interrupted during these events.

- Diesel was delivered on May 24, 2017.
- On May 25, 2017, sludge samples were collected from the dewatering bins for waste characterization analysis. The sludge characterization analytical results will be included in subsequent monthly reports.
- On May 30, 2017, the HDS Treatment Plant shutdown for approximately five hours due to a low level in the lime storage hopper caused by lime bridging in the lime storage hopper. Capture and conveyance of the CUD and DS was not interrupted during the HDS Treatment Plant shutdown.
- The analytical results from the Pond 4 initial characterization sampling event performed on April 25, 2017 are included in Table 5.

#### **Site-wide**

- Work continued on updating the Leviathan Mine Project Database with data from Atlantic Richfield and various agencies.
- Site trailers were delivered to the site on May 8, 2017.
- On May 16, 2017, a conference call was conducted with the U.S. EPA to provide a general progress update.
- On May 19, 2017, representatives of U.S. EPA, Washoe Tribe, Bureau of Indian Affairs (BIA), and Alpine Watershed Group toured the Leviathan Mine Site.
- Drainage and grading improvements were completed on the Nevada access road and access road to the ASB Treatment System.
- Snow removal and drainage improvements were completed on the California access road.
- Throughout the month of May, an exclusion zone was incorporated to moderate the potential risks to site personnel caused by the instability on the slope east and above Pond 4.

### **ACTIVITIES FOR UPCOMING MONTH**

#### **Aspen Seep**

- Continue operation of the ASB Treatment System in recirculation mode and continue monitoring and maintenance items outlined in the amended RAWP.
- Completed quarterly enhanced sampling event.
- Begin mobilizing and setting up solids management treatment equipment and transfer solids from Pond 3 and Pond 4 to the dewatering system.
- Conduct Biocell flushing and modification of standpipes.
- Troubleshoot inverter parameter and Sunny Web Box.
- Begin replacing propane tank pressure release valves (PRVs).

**CUD and DS**

- Continue HDS Treatment System routine O&M of the HDS Treatment System as outlined in the RAWP.
- Dispose of dewatered sludge in dewatering bins pending characterization results.
- Receive lime delivery.
- Receive diesel delivery.
- Continue to prepare HDS Treatment System for interim combined treatment operations.

**Site-wide**

- Continue to provide project progress updates to the U.S. EPA via conference call. The next conference call is currently scheduled for June 20, 2017.
- Continue road work on the California access road and the goat trail.
- Complete road maintenance on the 1.75 mile road section of Levia than Mine Road in front of the residences near Highway 395. Road maintenance activities will include surface grading, repair of drainage dips, and reapplication of Envirotac II as a dust suppressant.

If you have any questions or comments, please feel free to contact me at (657) 529-4537 or via e-mail at [Anthony.Brown@bp.com](mailto:Anthony.Brown@bp.com).

Sincerely,



for

Tony Brown  
Project Manager

Attachments:

- Table 1 – Aspen Seep Bioreactor Treatment System – Compliance Sample Results – April and May
- Table 2 – Aspen Seep Bioreactor Treatment System – Recent Flow, pH, and ORP Field Measurements
- Table 3 – Channel Underdrain, Delta Seep, and HDS Treatment Plant – Flow Rates
- Table 4 – High Density Sludge Treatment Plant – Operational Data Summary
- Table 5 - High Density Sludge Treatment Plant – Pond 4 Initial Characterization Results
- Table 6 – High Density Sludge Treatment Plant – Compliance Sample Results

cc: Douglas Carey, Lahontan Regional Water Quality Control Board  
Ronald Halsey, Atlantic Richfield Company  
Nathan Block, BP  
Jack Marjerison, Atlantic Richfield Company  
Reginald Ilao, Atlantic Richfield Company

Adam Cohen, Esq., Davis Graham & Stubbs LLP

Dave McCarthy, Copper Environmental Consulting

Marc Lombardi, Amec Foster Wheeler Environment & Infrastructure, Inc.

Sandy Riese, EnSci, Inc.

**TABLE 1**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - COMPLIANCE SAMPLE RESULTS**  
**MAY 2017 MONTHLY SUMMARY**  
Draft - Provisional Data

| Parameter                | Basis     | May 12, 2017<br>266ASPINF910<br>ASB Influent<br>(mg/L) | May 12, 2017<br>266ASPEFF909<br>ASB Effluent <sup>3</sup><br>(mg/L) | Maximum<br>Discharge<br>Criteria <sup>2</sup><br>(mg/L) | Average<br>Discharge<br>Criteria <sup>2</sup><br>(mg/L) |
|--------------------------|-----------|--|---|---|---|
| pH (s.u.) <sup>1</sup>   | Field     | 2.84   | 7.37  | -   | 6.0 - 9.0   |
| Aluminum                 | Dissolved | 76   | < 0.10  | 4.0   | 2.0   |
| Arsenic                  | Dissolved | 0.0045   | 0.00050 J   | 0.34  | 0.15  |
| Cadmium                  | Dissolved | 0.0039   | < 0.001   | 0.009   | 0.004   |
| Calcium                  | Dissolved | 430  | 430   | -   | -   |
| Chloride                 | Total     | 3.1  | 2.9   | -   | -   |
| Chromium                 | Dissolved | 0.021  | 0.0032  | 0.97  | 0.31  |
| Copper                   | Dissolved | 3.1  | 0.0017 J  | 0.03  | 0.02  |
| Hardness                 | Dissolved | 1500   | 1400  | -   | -   |
| Iron                     | Dissolved | 140  | 0.26  | 2.0   | 1.0   |
| Lead                     | Dissolved | < 0.0010   | < 0.0010  | 0.136   | 0.005   |
| Magnesium                | Dissolved | 89   | 74  | -   | -   |
| Nickel                   | Dissolved | 0.60   | 0.073   | 0.84  | 0.094   |
| Selenium                 | Total     | 0.013  | <b>0.008</b>  | NP  | 0.005   |
| Sulfate                  | Total     | 2400   | 2000  | -   | -   |
| Zinc                     | Dissolved | 0.89   | 0.019 J   | 0.21  | 0.21  |
| Acidity                  | Total     | 800  | < 2.0   | -   | -   |
| Alkalinity (Bicarbonate) | Total     | < 4.8  | 170   | -   | -   |
| Alkalinity (Carbonate)   | Total     | < 2.4  | < 2.4   | -   | -   |
| Alkalinity (Hydroxide)   | Total     | < 1.4  | < 1.4   | -   | -   |
| Alkalinity (Total)       | Total     | < 4.0  | 140   | -   | -   |
| Total Dissolved Solids   | Total     | 3200   | 2900  | -   | -   |
| Total Suspended Solids   | Total     | 30   | 12  | -   | -   |

Notes

<sup>1</sup> pH values are field measurements and are reported in standard units.

<sup>2</sup> Discharge criteria and basis for maximum and average values are listed in the Request for Approval of Modification to the Removal Action at the Leviathan Mine Memorandum (U.S. EPA, 2008).

<sup>3</sup> **Bold** values are above the maximum or average discharge criteria.

Abbreviations

< - Constituents that were not detected are listed as "<" and the reporting limit is shown.

"\_" - Discharge criteria not established or value not measured.

J - Results noted with "J" are an estimated value or were less than the reporting limit but greater than or equal to the method detection limit.

mg/L - milligrams per liter

NP - Not Promulgated

s.u. - standard unit

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                  | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|-----------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                       | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 01/07/11 <sup>2</sup> | 8.5   | 2.92         | 434.1       | 6.50                                   | -134.0      | 5.98  | -200.1      | -                                   | -           | 6.08                                   | -216.2      | 6.15                           | -4.9        |
| 02/01/11 <sup>2</sup> | 8.0   | 3.07         | 423.8       | 6.75                                   | -332.2      | 6.86  | -279.7      | -                                   | -           | 6.59                                   | -297.0      | 6.62                           | -9.3        |
| 03/11/11              | 8.5   | 3.05         | 384.7       | 7.66                                   | -239.2      | 7.11  | -344.7      | -                                   | -           | 6.85                                   | -370.1      | 7.05                           | -73.4       |
| 04/19/11 <sup>3</sup> | 30.0  | 2.61         | 454.9       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 4.72                           | 172.9       |
| 04/26/11              | 29.0  | 2.91         | 362.1       | 7.45                                   | -199.2      | 6.58  | -346.5      | 7.42                                | -232.8      | 6.41                                   | -369.7      | 7.22                           | -144.6      |
| 05/03/11              | 27.0  | 2.90         | 355.0       | 7.70                                   | -264.8      | 6.56  | -361.5      | 7.81                                | -264.9      | 6.54                                   | -402.2      | 7.60                           | -137.5      |
| 05/11/11              | 24.0  | 2.84         | 344.2       | 6.81                                   | -198.2      | 6.31  | -229.0      | 6.99                                | -200.7      | 6.23                                   | -204.0      | 6.99                           | -139.2      |
| 05/20/11              | 17.0  | 3.03         | 372.4       | 8.10                                   | -282.2      | 7.09  | -361.8      | 7.89                                | -219.6      | 6.39                                   | -367.9      | 7.36                           | -44.1       |
| 06/01/11              | 17.5  | 2.92         | 378.6       | 8.18                                   | -175.7      | 7.11  | -360.0      | 8.14                                | -272.8      | 6.55                                   | -337.9      | 7.32                           | -50.3       |
| 06/15/11 <sup>4</sup> | 15.6  | 3.18         | 407.7       | -                                      | -           | -   | -           | 8.60                                | -231.3      | -                                      | -           | 8.15                           | -3.9        |
| 06/21/11 <sup>4</sup> | 14.7  | 3.09         | 415.6       | -                                      | -           | -   | -           | 8.15                                | -184.2      | -                                      | -           | -                              | -           |
| 06/28/11 <sup>5</sup> | 15.0  | 2.95         | 204.5       | 7.66                                   | -503.6      | 6.94  | -581.5      | 8.44                                | -458.1      | 6.93                                   | -581.5      | 7.52                           | -85.1       |
| 07/06/11              | 14.0  | 2.95         | 237.1       | 8.37                                   | -50.3       | 6.98  | -525.6      | 8.10                                | -382.9      | 6.75                                   | -550.2      | 7.81                           | -249.1      |
| 07/13/11              | 13.8  | 2.88         | 352.2       | 8.46                                   | -312.3      | 6.83  | -412.1      | 5.43                                | -48.5       | 6.67                                   | -420.1      | 7.84                           | -37.4       |
| 07/19/11              | 13.0  | 3.11         | 304.3       | 7.27                                   | -462.3      | 6.93  | -434.0      | 8.40                                | -407.5      | 6.85                                   | -436.0      | 8.0                            | -86.6       |
| 07/28/11              | -   | 2.98         | 320.8       | 8.32                                   | -294.3      | 7.10  | -393.6      | 8.55                                | -165.4      | 6.99                                   | -376.0      | 7.90                           | -70.4       |
| 08/04/11              | 12.0  | 3.12         | 337.7       | 7.88                                   | -416.0      | 7.20  | -437.3      | 8.73                                | -437.5      | 7.11                                   | -431.8      | 8.14                           | -155.7      |
| 08/11/11              | 12.0  | 2.85         | 360.2       | 7.72                                   | -456.0      | 7.27  | -421.6      | 8.95                                | -421.9      | 6.87                                   | -443.0      | 8.04                           | -162.8      |
| 08/17/11              | 12.0  | 3.00         | 362.5       | 6.93                                   | -291.8      | 6.84  | -415.5      | 8.60                                | -338.3      | 6.92                                   | -437.7      | 7.97                           | -187.8      |
| 08/24/11              | 12.0  | 3.01         | 362.8       | 6.42                                   | -257.0      | 7.08  | -405.5      | 8.30                                | -277.9      | 6.84                                   | -402.2      | 7.85                           | -164.4      |
| 08/30/11              | 12.0  | 2.90         | 350.9       | 8.23                                   | -321.5      | 7.27  | -433.4      | 7.49                                | -366.0      | 7.05                                   | -428.0      | 7.63                           | -63.5       |
| 09/08/11              | 12.0  | 2.98         | 362.2       | 7.66                                   | -387.0      | 6.98  | -405.5      | 7.55                                | -375.2      | 6.80                                   | -402.3      | 7.91                           | -183.6      |
| 09/15/11              | 12.0  | 3.01         | 385.0       | 8.16                                   | -194.0      | 6.97  | -372.7      | 8.38                                | -359.1      | 6.90                                   | -342.6      | 8.07                           | -146.1      |
| 09/23/11 <sup>4</sup> | 12.0  | 2.99         | 400.1       | -                                      | -           | -   | -           | 6.81                                | -142.1      | -                                      | -           | 8.30                           | -295.9      |
| 09/28/11              | 12.0  | 2.86         | 429.9       | 7.29                                   | -312.1      | 6.76  | -232.9      | 7.11                                | -108.4      | 6.71                                   | -224.1      | 7.54                           | -131.1      |
| 10/06/11              | 12.0  | 2.96         | 389.0       | 6.73                                   | -220.1      | 6.48  | -281.5      | 6.55                                | -250.8      | 6.80                                   | -331.8      | 7.01                           | -159.3      |
| 10/20/11              | -   | -            | -           | -                                      | -           | -   | -           | 7.50                                | -375.9      | 6.93                                   | -365.1      | -                              | -           |
| 10/21/11 <sup>6</sup> | -   | -            | -           | -                                      | -           | -   | -           | 3.14                                | 416.8       | 6.86                                   | -365.1      | -                              | -           |
| 10/27/11              | -   | 3.13         | 424.5       | -                                      | -           | -   | -           | 6.91                                | -189.7      | -                                      | -           | -                              | -           |
| 10/28/11              | 11.5  | 2.91         | 375.7       | 7.26                                   | -186.5      | 6.68  | -246.5      | 7.41                                | -215.3      | 6.84                                   | -265.3      | 7.10                           | -159.0      |
| 11/08/11              | -   | 3.12         | 368.8       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | -                              | -           |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                  | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|-----------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                       | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 11/10/11              | 11.8  | 3.08         | 369.9       | -                                      | -           | -   | -           | 7.13                                | -213.9      | -                                      | -           | -                              | -           |
| 11/15/11              | 11.5  | 3.08         | 371.9       | 7.89                                   | -335.8      | 7.21  | -223.6      | 7.54                                | -252.3      | 6.68                                   | -348.3      | 7.14                           | -109.9      |
| 12/07/11              | 11.0  | 2.86         | 375.4       | 7.30                                   | -260.8      | 7.01  | -347.1      | 7.51                                | -387.9      | 6.72                                   | -334.1      | 7.21                           | -114.9      |
| 01/04/12              | -   | -            | -           | -                                      | -           | 7.72  | -232.2      | 8.13                                | -148.7      | 6.19                                   | -344.4      | 7.65                           | -242.4      |
| 01/05/12              | 10.0  | 2.65         | 396.7       | 7.14                                   | -406.2      | 8.34  | -368.0      | 8.40                                | -318.9      | 6.16                                   | -380.4      | 8.20                           | -31.6       |
| 02/10/12              | 9.0   | 2.70         | 400.0       | 8.60                                   | -246.9      | 7.69  | -248.7      | -                                   | -           | 7.15                                   | -264.4      | 8.04                           | 61.5        |
| 03/08/12              | 8.6   | 2.43         | 401.0       | 8.61                                   | -301.3      | 8.21  | -240.5      | -                                   | -           | 6.89                                   | -296.8      | 8.47                           | 81.3        |
| 04/19/12              | 8.3   | 2.92         | 395.1       | 8.20                                   | -305.7      | 6.87  | -357.7      | 8.51                                | -375.3      | 6.50                                   | -342.9      | 7.49                           | -94.7       |
| 04/27/12              | 9.4   | 3.15         | 377.9       | 8.22                                   | -90.6       | 7.00  | -239.6      | 8.14                                | -286.9      | 6.52                                   | -388.1      | 7.56                           | -75.8       |
| 05/03/12              | 7.8   | 2.99         | 369.7       | 7.99                                   | -288.6      | 7.27  | -286.9      | 8.12                                | -348.5      | 6.68                                   | -387.7      | 7.80                           | -33.5       |
| 05/18/12              | -   | 2.58         | 394.3       | 8.04                                   | -220.4      | 6.84  | -251.4      | 7.58                                | -313.4      | 6.67                                   | -281.9      | 7.64                           | -106.5      |
| 05/30/12              | 7.8   | 3.16         | 363.3       | 8.06                                   | -287.9      | 6.94  | -431.6      | 8.38                                | -348.0      | 8.97                                   | -420.8      | -                              | -           |
| 06/06/12              | 7.9   | 2.60         | 399.6       | 8.36                                   | -224.6      | 6.71  | -365.3      | 8.46                                | -356.2      | 6.83                                   | -394.2      | 7.86                           | -51.7       |
| 06/14/12              | 6.8   | 3.02         | 376.8       | 7.09                                   | -426.9      | 7.23  | -354.6      | 8.81                                | -350.3      | 6.94                                   | -357.8      | 7.62                           | -169.2      |
| 06/18/12              | 7.2   | 2.76         | 395.4       | 8.45                                   | -319.4      | 7.38  | -402.1      | 8.24                                | -420.6      | 6.98                                   | -399.7      | 7.87                           | -174.3      |
| 06/26/12              | 6.8   | 3.01         | 369.3       | 8.01                                   | -293.3      | 6.98  | -360.6      | 8.23                                | -272.9      | 7.27                                   | -355.7      | 7.82                           | -203.7      |
| 07/05/12              | 6.8   | 2.98         | 363.9       | 8.39                                   | -397.1      | 7.14  | -430.6      | 7.60                                | -346.7      | 7.07                                   | -418.4      | -                              | -           |
| 07/11/12              | 5.6   | 2.82         | 403.1       | 8.00                                   | -346.1      | 7.22  | -406.7      | 7.58                                | -388.7      | 6.76                                   | -398.6      | 7.49                           | -144.9      |
| 07/18/12              | 6.0   | 2.85         | 396.4       | 8.38                                   | -402.9      | 7.01  | -421.0      | 7.94                                | -374.0      | 6.83                                   | -420.0      | 7.39                           | -337.9      |
| 07/24/12              | 6.5   | 2.72         | 403.0       | 8.30                                   | -412.1      | 6.98  | -409.6      | 7.96                                | -389.9      | 6.91                                   | -412.9      | 7.51                           | -129.0      |
| 08/02/12              | 5.8   | 2.81         | 437.5       | 8.05                                   | -396.3      | 7.43  | -405.5      | 8.91                                | -97.1       | 7.29                                   | -389.6      | -                              | -           |
| 08/06/12              | 5.3   | 2.89         | 395.8       | 7.92                                   | -353.2      | 7.72  | -446.1      | 9.50                                | -16.0       | 7.71                                   | -428.5      | -                              | -           |
| 08/14/12              | 6.0   | 2.85         | 470.5       | 8.37                                   | -326.7      | 7.07  | -351.8      | 8.33                                | -274.0      | 7.02                                   | -342.5      | -                              | -           |
| 08/21/12              | 5.3   | 2.83         | 390.7       | 8.55                                   | -438.1      | 7.34  | -425.5      | 8.48                                | -407.5      | 7.36                                   | -429.1      | 7.03                           | -156.2      |
| 08/28/12              | 5.6   | 2.78         | 427.9       | 8.40                                   | -401.5      | 7.30  | -409.7      | 8.17                                | -368.0      | 7.16                                   | -409.3      | 7.44                           | -131.3      |
| 09/05/12              | 5.8   | 2.95         | 478.0       | 8.44                                   | -360.4      | 7.44  | -360.2      | 8.35                                | -300.9      | 7.27                                   | -342.2      | 8.03                           | -99.9       |
| 09/13/12              | 5.6   | 2.91         | 428.7       | 8.41                                   | -380.4      | 7.45  | -389.9      | 8.13                                | -361.1      | 7.45                                   | -390.9      | 7.76                           | 42.5        |
| 09/19/12              | 5.5   | 2.99         | 446.9       | 8.24                                   | -359.8      | 7.36  | -367.1      | 7.85                                | -321.5      | 7.26                                   | -372.9      | 7.97                           | 9.5         |
| 09/26/12              | 5.4   | 3.11         | 482.0       | 6.60                                   | -311.9      | 6.76  | -333.3      | 8.27                                | -261.7      | 7.07                                   | -357.6      | 8.09                           | 35.5        |
| 09/27/12 <sup>7</sup> | -   | -            | -           | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.82                           | -124.6      |
| 10/01/12              | 5.5   | 2.92         | 461.7       | 7.87                                   | -360.3      | 6.72  | -362.0      | 7.48                                | -299.5      | 6.42                                   | -345.8      | 7.58                           | 37.4        |
| 10/04/12 <sup>7</sup> | -   | -            | -           | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.71                           | 59.0        |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                    | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|-------------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                         | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 10/10/12 <sup>7</sup>   | 5.5   | 2.49         | 428.6       | 8.16                                   | -374.5      | 6.95  | -382.2      | 7.42                                | -322.2      | 6.71                                   | -379.5      | 7.87                           | 42.9        |
| 10/17/12                | 5.4   | 2.50         | 432.0       | 8.53                                   | -351.0      | 7.44  | -347.6      | 8.23                                | -314.7      | 7.15                                   | -350.8      | 7.89                           | 2.4         |
| 11/07/12 <sup>4,8</sup> | 5.5   | 2.46         | 435.6       | -                                      | -           | -   | -           | 7.46                                | 67.5        | -                                      | -           | -                              | -           |
| 11/14/12 <sup>8</sup>   | 5.5   | 2.52         | 344.1       | 7.46                                   | 78.0        | 6.85  | 52.8        | 7.32                                | 48.0        | 6.80                                   | 76.5        | 6.82                           | 104.3       |
| 12/11/12                | 5.0   | 1.96         | 454.5       | 7.65                                   | -37.9       | 6.93  | -101.9      | 8.02                                | -109.1      | 6.54                                   | -291.0      | 7.21                           | 120.5       |
| 01/09/13                | 5.1   | 2.25         | 464.2       | 6.91                                   | -163.3      | 6.71  | -208.3      | -                                   | -           | 6.41                                   | -231.1      | 6.84                           | -19.7       |
| 02/07/13                | 5.0   | 1.81         | 435.9       | 8.91                                   | -190.2      | 7.17  | -289.4      | 8.89                                | -158.6      | 7.17                                   | -269.5      | 8.60                           | -39.5       |
| 03/01/13                | 5.0   | 2.75         | 502.8       | 8.21                                   | -174.0      | 7.67  | -249.7      | 8.47                                | -223.8      | 7.14                                   | -224.9      | 8.42                           | -133.0      |
| 03/22/13 <sup>9</sup>   | -   | -            | -           | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 8.21                           | 81.4        |
| 04/11/13                | 5.0   | 2.80         | 484.9       | 8.45                                   | -102.1      | 7.27  | -247.5      | 7.70                                | -198.3      | 7.07                                   | -264.1      | 8.07                           | 105.5       |
| 05/01/13                | 5.0   | 2.91         | 426.5       | 8.63                                   | -207.4      | 7.31  | -267.3      | 7.62                                | -231.8      | 7.15                                   | -264.1      | 7.35                           | -59.9       |
| 05/12/13                | 5.0   | 2.88         | 371.3       | 8.51                                   | -223.9      | 7.27  | -275.9      | 7.87                                | -241.9      | 7.01                                   | -320.0      | -                              | -           |
| 05/20/13                | 4.5   | 2.58         | 352.3       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 8.01                           | 83.0        |
| 05/21/13                | -   | -            | -           | 8.42                                   | -412.3      | 7.23  | -420.9      | 7.59                                | -379.8      | 7.05                                   | -419.7      | -                              | -           |
| 05/30/13                | 4.5   | 2.78         | 451.2       | 8.49                                   | -322.8      | 7.31  | -336.2      | 8.06                                | -305.5      | 7.33                                   | -328.3      | 7.94                           | -112.2      |
| 06/03/13                | 4.4   | 2.78         | 415.2       | 8.54                                   | -317.8      | 7.36  | -404.4      | 7.30                                | -346.5      | 7.20                                   | -371.6      | 8.17                           | -155.7      |
| 06/06/13                | 4.5   | 2.78         | 437.8       | 8.31                                   | -364.1      | 7.42  | -402.9      | 7.90                                | -304.1      | 7.30                                   | -411.2      | 7.86                           | -30.2       |
| 06/12/13                | 4.2   | 2.70         | 458.6       | 7.58                                   | -373.1      | 7.61  | -352.8      | 8.33                                | -259.9      | 7.46                                   | -348.2      | -                              | -           |
| 06/17/13                | 4.2   | 2.87         | 421.8       | 8.32                                   | -291.4      | 7.31  | -302.6      | 8.85                                | -367.9      | 7.21                                   | -381.3      | 7.75                           | -47.9       |
| 06/25/13                | 4.2   | 2.60         | 427.0       | 8.18                                   | -343.6      | 7.17  | -374.9      | 7.65                                | -313.7      | 7.11                                   | -373.7      | 7.82                           | -79.4       |
| 07/02/13                | 4.0   | 2.61         | 421.0       | 8.20                                   | -328.4      | 7.14  | -380.6      | 7.60                                | -289.7      | 7.05                                   | -366.0      | 7.83                           | -133.0      |
| 07/09/13                | 4.0   | 2.59         | 442.9       | 8.39                                   | -315.0      | 7.26  | -359.2      | 7.81                                | -284.7      | 7.31                                   | -366.7      | 7.73                           | -27.7       |
| 07/16/13                | 3.6   | 2.65         | 395.0       | 8.27                                   | -373.7      | 7.35  | -407.0      | 8.07                                | -323.9      | 7.15                                   | -400.9      | 7.76                           | -86.3       |
| 07/23/13                | 4.0   | 2.60         | 407.3       | 8.24                                   | -354.3      | 7.30  | -388.2      | 7.56                                | -347.2      | 7.34                                   | -367.9      | 7.86                           | -19.9       |
| 07/30/13                | 4.1   | 2.59         | 399.7       | 8.27                                   | -396.8      | 7.26  | -419.2      | 7.32                                | -428.9      | 7.35                                   | -428.9      | -                              | -           |
| 08/06/13                | 4.0   | 2.48         | 443.2       | 8.34                                   | -368.1      | 7.23  | -373.9      | 7.63                                | -325.1      | 7.33                                   | -378.2      | 8.25                           | -38.0       |
| 08/14/13                | 4.0   | 2.60         | 428.5       | 8.26                                   | -371.9      | 7.18  | -378.9      | 7.49                                | -327.5      | 7.08                                   | -375.6      | 7.36                           | -91.0       |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                  | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|-----------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                       | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 08/20/13              | 4.0   | 2.47         | 434.3       | 8.90                                   | -371.3      | 7.48  | -316.5      | 7.74                                | -313.3      | 7.23                                   | -314.7      | 7.47                           | -4.6        |
| 09/09/13              | 3.6   | 2.33         | 426.3       | 7.69                                   | -58.3       | 7.43  | -231.7      | 7.96                                | -110.7      | 7.21                                   | -241.3      | 7.50                           | -3.7        |
| 09/17/13              | 3.5   | 2.57         | 417.8       | 8.15                                   | -232.2      | 7.06  | -257.7      | 7.41                                | -259.1      | 7.03                                   | -330.3      | 6.89                           | 26.1        |
| 09/24/13              | 3.5   | 2.46         | 430.9       | 8.11                                   | -356.3      | 7.31  | -383.6      | 7.83                                | -222.8      | 6.72                                   | -352.3      | 7.86                           | 35.9        |
| 10/02/13              | 3.6   | 2.31         | 440.1       | 7.99                                   | -332.5      | 6.33  | -372.0      | 7.67                                | -341.9      | 6.85                                   | -381.4      | 8.00                           | -214.0      |
| 10/07/13              | 3.6   | 2.26         | 448.6       | 7.89                                   | -301.4      | 6.64  | -314.9      | 7.30                                | -297.5      | 6.63                                   | -320.2      | -                              | -           |
| 10/16/13 <sup>4</sup> | 3.6   | 2.62         | 430.5       | -                                      | -           | -   | -           | 8.06                                | -12.0       | -                                      | -           | -                              | -           |
| 10/22/13 <sup>4</sup> | 3.5   | 2.45         | 432.4       | -                                      | -           | -   | -           | 7.55                                | 72.0        | -                                      | -           | 6.81                           | 99.7        |
| 10/30/13              | 3.6   | 2.28         | 427.0       | 7.75                                   | -356.4      | 6.79  | -353.6      | 7.56                                | -304.9      | 6.84                                   | -354.7      | -                              | -           |
| 11/05/13              | 3.1   | 2.13         | 452.6       | 8.47                                   | -295.5      | 7.08  | -344.9      | 7.53                                | -275.8      | 7.00                                   | -316.2      | 7.13                           | 97.5        |
| 12/11/13              | 3.5   | 2.47         | 415.7       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.81                           | -181.7      |
| 12/12/13              | -   | -            | -           | 6.45                                   | -266.6      | 6.47  | -314.7      | 6.57                                | -315.5      | 7.14                                   | -252.3      | -                              | -           |
| 01/02/14              | 3.2   | 4.10         | 392.7       | 7.30                                   | -249.7      | 6.25  | -244.2      | 7.91                                | -222.3      | 6.90                                   | -257.3      | 7.50                           | -144.2      |
| 02/13/14              | 3.5   | 2.46         | 416.2       | 8.2                                    | -289.3      | 7.34  | -352.4      | 6.97                                | -298.4      | 7.23                                   | -351.2      | 7.68                           | -293.3      |
| 03/12/14              | 3.0   | 2.58         | 516.4       | 8.31                                   | -184.1      | 7.52  | -291.8      | 7.85                                | -343.3      | 7.19                                   | -279.1      | 7.04                           | 54.1        |
| 04/15/14              | 2.8   | 2.81         | 458         | 8.02                                   | -205.1      | 7.11  | -346.6      | 8.1                                 | -255.6      | 7.29                                   | -374.1      | 8.03                           | -151.2      |
| 05/08/14              | 2.0   | 2.7          | 221         | 8.42                                   | -259.2      | 7.03  | -14.3       | 7.69                                | -300        | 6.7                                    | -324.7      | 7.49                           | -83.4       |
| 05/13/14              | 2.5   | 2.81         | 466.3       | 8.63                                   | -265.4      | 7.05  | -303        | 7.93                                | -314.6      | 6.9                                    | -309.6      | 7.93                           | -90.1       |
| 05/28/14              | 2.7   | 2.82         | 437.2       | 8.27                                   | -380        | 7.3   | -398.5      | 7.47                                | -351.5      | 7.22                                   | -408.2      | 8.03                           | -142.1      |
| 06/03/14              | 2.5   | 2.9          | 502.6       | 8.41                                   | -306        | 7.41  | -314.6      | 7.43                                | -290.2      | 7.33                                   | -321.1      | 7.35                           | -52         |
| 06/09/14              | 2.0   | 2.93         | 443.4       | 8.24                                   | -351        | 7.4   | -369.8      | 7.54                                | -343.2      | 7.25                                   | -361.8      | -                              | -           |
| 06/17/14              | 2.5   | 2.74         | 439.7       | 8.3                                    | -355.5      | 7.32  | -381.1      | 6.83                                | -273.5      | 7.39                                   | -393.5      | -                              | -           |
| 06/24/14              | 2.0   | 2.97         | 419.3       | 8.33                                   | -365.2      | 7.38  | -392.8      | 7.29                                | -320.1      | 7.32                                   | -387.1      | -                              | -           |
| 07/02/14              | 1.8   | 2.71         | 425.0       | 8.28                                   | -369.4      | 7.37  | -403.1      | 7.56                                | -357.4      | 7.34                                   | -397.0      | -                              | -           |
| 07/08/14              | 2.0   | 2.81         | 411.6       | 8.25                                   | -386.7      | 7.36  | -399.9      | 7.49                                | -345.8      | 7.34                                   | -369.8      | -                              | -           |
| 07/16/14              | 2.4   | 2.59         | 433.2       | 8.32                                   | -375.2      | 7.54  | -401.3      | 7.54                                | -328.3      | 7.49                                   | -396.1      | 8.07                           | -221.8      |
| 07/23/14              | 2.2   | 2.88         | 433         | 8.33                                   | -365.2      | 7.3   | -366.1      | 7.11                                | -305.8      | 7.16                                   | 346.2       | 7.87                           | -170.2      |
| 07/29/14              | 2.0   | 2.82         | 463.4       | 8.31                                   | -325.7      | 7.38  | -342.5      | 7.64                                | -294.2      | 7.30                                   | -345.7      | 8.33                           | -203.2      |
| 08/06/14              | 2.0   | 2.96         | 568.7       | 8.48                                   | -281.3      | 7.68  | -317.9      | 7.87                                | -253.0      | 7.63                                   | -313.1      | 8.34                           | -93.8       |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                     | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|--------------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                          | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 08/12/14                 | 2.0   | 2.74         | 490.3       | 8.41                                   | -259.4      | 7.32  | -334.4      | 7.60                                | -271.0      | 7.30                                   | -333.3      | 7.74                           | -96.4       |
| 08/19/14                 | 2.1   | 2.88         | 496.4       | 8.45                                   | -237.3      | 7.41  | -317.7      | 7.53                                | -276.4      | 7.38                                   | -312.1      | 7.32                           | -95.4       |
| 08/26/14                 | 2.2   | 2.95         | 505.1       | 8.51                                   | -247.4      | 7.55  | -306.3      | 7.77                                | -242.2      | 7.48                                   | -297.2      | 7.54                           | -43         |
| 09/02/14                 | 2.0   | 2.8          | 512.8       | 8.5                                    | -276.8      | 7.54  | -318.9      | 7.71                                | -224.1      | 7.45                                   | -331.7      | 8.33                           | -113        |
| 09/9/2014 <sup>10</sup>  | 1.9   | 2.86         | 498.1       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.81                           | -190        |
| 09/15/2014 <sup>10</sup> | 1.8   | 2.83         | 482.7       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.9                            | 69.4        |
| 09/22/14                 | 2.0   | 2.86         | 482.6       | 8.34                                   | -277.5      | 7.42  | -316.8      | 7.85                                | -248.5      | 7.25                                   | -299.5      | 8.11                           | -21.6       |
| 09/30/14                 | 2.2   | 2.8          | 479.2       | 8.19                                   | -279.2      | 7.41  | -335.4      | 7.91                                | -249.4      | 7.40                                   | -332.4      | -                              | -           |
| 10/06/14                 | 2.0   | 2.62         | 484.9       | 8.33                                   | -241.5      | 7.52  | -248.4      | 7.91                                | -247.2      | 7.56                                   | -225.6      | -                              | -           |
| 10/14/14                 | 2.0   | 2.91         | 155.6       | 8.36                                   | -402.9      | 7.69  | -411.4      | 7.94                                | -350.9      | 7.54                                   | -428.8      | -                              | -           |
| 10/23/14                 | 1.8   | 2.87         | 480.3       | 8.83                                   | -309.2      | 8.12  | -332        | 7.76                                | -277.3      | 7.91                                   | -326.9      | 7.77                           | 122         |
| 10/29/14                 | 2.2   | 2.75         | 475         | 7.94                                   | -277.2      | 7.34  | -285        | 7.34                                | -215.9      | 7.27                                   | -281.6      | -                              | -           |
| 11/05/14                 | 2.3   | 2.86         | 462.2       | 8.26                                   | -263.7      | 7.48  | -267.5      | 7.45                                | -193.3      | 7.63                                   | -316.7      | 7.21                           | 163         |
| 11/10/14                 | 2.0   | 2.71         | 486.9       | 8.29                                   | -227.3      | 7.50  | -292.3      | 8.10                                | -275.2      | 7.30                                   | -273.5      | 7.22                           | 174.5       |
| 12/09/14                 | 2.0   | 2.77         | 471.2       | 8.33                                   | -271.3      | 7.50  | -316.2      | 7.81                                | -255.6      | 7.43                                   | -318        | 7.61                           | 9.7         |
| 01/14/15                 | 2.2   | 2.35         | 455.3       | 8.01                                   | -322.1      | 7.52  | -306.7      | 8.38                                | -296.3      | 7.39                                   | -360.1      | 7.47                           | -216.2      |
| 02/04/15                 | 2.0   | 2.64         | 490         | 8.35                                   | -311.5      | 7.76  | -306.3      | 7.80                                | -276.3      | 7.69                                   | -301.6      | 7.5                            | -88.9       |
| 03/17/15                 | 1.9   | 2.33         | 498.5       | 8.9                                    | -338.9      | 7.35  | -318.9      | 7.10                                | -245.1      | 7.04                                   | -294.4      | 7.33                           | 156.9       |
| 04/14/15                 | 1.6   | 2.88         | 452         | 8.72                                   | -296.4      | 7.62  | -299.8      | 8.02                                | -247.2      | 7.51                                   | -303.3      | 8.32                           | 16.7        |
| 04/22/15                 | 1.6   | 2.79         | 434.5       | 8.53                                   | -273.6      | 7.49  | -257.2      | 7.67                                | -304.8      | 7.27                                   | -247.9      | 8.03                           | 66.7        |
| 04/29/15                 | 1.6   | 2.8          | 460.2       | 8.61                                   | -333.7      | 7.78  | -302.9      | 7.88                                | -280.5      | 7.48                                   | -333.3      | 7.72                           | 52          |
| 05/06/15                 | 1.4   | 2.73         | 494.6       | 8.48                                   | -302.4      | 7.92  | -337.1      | 7.80                                | -279.8      | 7.58                                   | -361.7      | 8.36                           | 10.1        |
| 05/12/15                 | 1.5   | 2.75         | 482.5       | 8.49                                   | -333.8      | 7.74  | -294.9      | 7.25                                | -249.5      | 7.38                                   | -320.9      | 7.68                           | 42.7        |
| 05/27/15                 | 1.8   | 2.59         | 471.5       | 8.13                                   | -326.5      | 8.30  | -318.5      | 7.10                                | -281.5      | 7.26                                   | -338        | 7.15                           | -261.8      |
| 06/03/15                 | 1.4   | 2.95         | 433.6       | 8.27                                   | -331.3      | 8.10  | -302.2      | 7.54                                | -254.3      | 7.29                                   | -294.7      | -                              | -           |
| 06/09/15                 | 1.4   | 2.79         | 454.8       | 8.21                                   | -289.1      | 8.11  | -269.8      | 6.79                                | -248.1      | 7.07                                   | -267.3      | -                              | -           |
| 06/16/15                 | 1.3   | 2.65         | 385         | 8.35                                   | -404.4      | 8.32  | -377.3      | 7.41                                | -356.7      | 7.40                                   | -402.1      | 7.85                           | -217.3      |
| 07/01/15                 | 1.7   | 2.77         | 301.2       | 8.09                                   | -383.2      | 7.14  | -407.6      | 6.68                                | -321.6      | 6.92                                   | -394.6      | -                              | -           |
| 07/08/15                 | 2.0   | 2.69         | 385.3       | 7.9                                    | -327        | 7.58  | -399.6      | 7.45                                | -338.2      | 7.59                                   | -400.2      | -                              | -           |
| 07/14/15                 | 1.4   | 2.85         | 381.3       | 9.77                                   | -467.5      | 7.38  | -370        | 7.12                                | -322.7      | 7.41                                   | -405.2      | 8.18                           | -211.9      |
| 07/16/15                 | 1.4   | 2.84         | 383.4       | 8.16                                   | -346        | 7.08  | -383.8      | 7.28                                | -331.0      | 6.88                                   | -370        | 8.19                           | -271.7      |
| 07/21/15                 | 1.6   | 2.66         | 389.0       | 8.04                                   | -308.1      | 7.32  | -355.3      | 7.31                                | -291.3      | 7.25                                   | -305.5      | 7.70                           | -159.7      |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                     | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|--------------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                          | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 07/28/15                 | 1.2   | 2.94         | 338.7       | 8.37                                   | -328.3      | 7.53  | -366.9      | 7.51                                | -315.7      | 7.50                                   | -348.1      | 8.10                           | -156.1      |
| 08/03/15                 | 1.2   | 2.74         | 376.5       | 8.29                                   | -371.3      | 7.66  | -382.6      | 7.48                                | -334.5      | 7.28                                   | -379.1      | 7.68                           | -94.2       |
| 08/14/2015 <sup>10</sup> | 2.2   | 2.40         | 413.6       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | -                              | -           |
| 08/20/2015 <sup>10</sup> | 1.2   | 2.74         | 393.3       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | -                              | -           |
| 08/26/2015 <sup>10</sup> | 1.0   | 2.55         | 344.7       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | -                              | -           |
| 09/04/15                 | 1.2   | 2.75         | 416.3       | 8.16                                   | -383.5      | 7.60  | -402.7      | 7.57                                | -355.4      | 7.57                                   | -407.9      | -                              | -           |
| 09/10/15                 | 1.1   | 2.78         | 362.2       | 7.98                                   | -360.1      | 7.26  | -360.9      | 7.65                                | -347.8      | 7.11                                   | -399.7      | -                              | -           |
| 09/18/15                 | 1.2   | 2.53         | 284.4       | 7.92                                   | -343.1      | 7.20  | -383.6      | 7.75                                | -353.9      | 7.14                                   | -388.9      | -                              | -           |
| 09/23/15                 | 1.2   | 2.76         | 365.0       | 8.34                                   | -450.9      | 7.76  | -442.9      | 7.80                                | -347.6      | 7.50                                   | -419.6      | -                              | -           |
| 09/30/15                 | 1.3   | 2.74         | 365.0       | 8.17                                   | -378.7      | 7.58  | -431.1      | 7.31                                | -367.5      | 7.41                                   | -408.3      | -                              | -           |
| 10/07/15                 | 1.3   | 2.66         | 367.5       | 8.06                                   | -320.7      | 7.54  | -370.4      | 6.89                                | -333.9      | 7.28                                   | -388.9      | -                              | -           |
| 10/14/15                 | 1.3   | 2.79         | 356         | 8.32                                   | -343.6      | 7.80  | -362.3      | 7.10                                | -298.1      | 7.42                                   | -396.5      | -                              | -           |
| 10/22/15                 | 1.2   | 2.81         | 348.1       | 8.51                                   | -292.8      | 7.55  | -367.9      | 7.58                                | -270.5      | 7.74                                   | -384.4      | 7.53                           | 107.5       |
| 11/12/15                 | 1.2   | 2.61         | 392.3       | 8.35                                   | -312.9      | 7.70  | -341.8      | 7.52                                | -295.8      | 7.61                                   | -376.8      | 8.29                           | -106.4      |
| 12/02/15                 | 1.4   | 2.26         | 407.3       | 8.7                                    | -354.3      | 7.11  | -377.1      | 7.08                                | -330.5      | 6.99                                   | -370.5      | 7.03                           | -96.1       |
| 01/12/16                 | 1.4   | 2.24         | 419.7       | 8.4                                    | -371.9      | 7.23  | -408.1      | 9.89                                | -262.1      | 7.52                                   | -399.9      | 7.92                           | -148.6      |
| 03/17/16                 | 3.6   | 2.54         | 424         | 7.48                                   | -209.6      | 7.46  | -343.7      | 6.87                                | -258.7      | 7.25                                   | -357.4      | 7.48                           | 209.2       |
| 04/18/16                 | 3.5   | 2.71         | 411.2       | 7.47                                   | -199.6      | 7.76  | -173.4      | 7.02                                | -188.8      | 8.09                                   | -315.9      | 7.89                           | -45.1       |
| 05/11/16                 | 5.4   | 2.89         | 383.9       | 7.69                                   | -234.8      | 7.39  | -350        | 6.19                                | -316.9      | 7.05                                   | -366.7      | 7.34                           | -112.4      |
| 05/18/16                 | 7.0   | 2.69         | 398.6       | 8.3                                    | -241.7      | 7.35  | -362.6      | 5.54                                | -266.5      | 7.24                                   | -356.9      | 7.59                           | -124.5      |
| 05/26/16                 | 5.0   | 2.72         | 399.2       | 7.91                                   | -229.7      | 7.93  | -248.3      | 6.80                                | -311.4      | 7.08                                   | -354.7      | 7.53                           | 50.5        |
| 05/31/16                 | 5.2   | 2.85         | 400.5       | 8.05                                   | -229.7      | 7.75  | -306.7      | 7.15                                | 311.9       | 6.81                                   | -338.7      | 7.42                           | -108.5      |
| 06/06/16                 | 6.0   | 2.58         | 418.4       | 8.49                                   | -249.6      | 7.64  | -379.1      | 7.38                                | -356.3      | 7.25                                   | -394.4      | 7.67                           | -96.9       |
| 06/14/16                 | 4.2   | 2.33         | 446.8       | 8.32                                   | -247.3      | 8.33  | -368.8      | 7.25                                | -335.2      | 7.45                                   | -386.9      | 7.59                           | -24.9       |
| 06/21/16                 | 5.2   | 2.86         | 479         | 8.26                                   | -136.9      | 7.38  | -275.5      | 7.48                                | -279.8      | 7.36                                   | -311.9      | 7.83                           | -23.4       |
| 06/28/16                 | 5.0   | 2.98         | 489.7       | 7.83                                   | -267.7      | 7.15  | -276.7      | 7.21                                | -233.3      | 7.15                                   | -298.1      | 7.9                            | -53.4       |
| 07/06/16                 | 5.2   | 3.08         | 465.1       | 8.02                                   | -255.6      | 7.27  | -286.2      | 7.05                                | -224.6      | 7.32                                   | -294.7      | 7.54                           | -59.2       |
| 07/12/16                 | 5.3   | 2.65         | 478.3       | 8.64                                   | -273.2      | 7.16  | -300.1      | 7.26                                | -271.5      | 7.21                                   | -299.9      | 7.42                           | 383         |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date                   | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|------------------------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|                        | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 07/19/16               | 5.2   | 2.91         | 499.7       | 8.32                                   | -252        | 7.16  | -284.4      | 7.34                                | -257.8      | 7.24                                   | -312.5      | 7.31                           | 27          |
| 07/26/16               | 5.0   | 2.86         | 486.6       | 8.57                                   | -272        | 7.29  | -229.7      | 6.97                                | -98.2       | 7.09                                   | -214.7      | 7.27                           | -10.6       |
| 08/03/16               | 5.0   | 2.52         | 468.3       | 8.42                                   | -314.8      | 7.21  | -340.6      | 7.12                                | -306.4      | 7.16                                   | -353        | 7.43                           | 10.6        |
| 08/09/16               | 5.0   | 3.36         | -52.1       | 8.14                                   | -338        | 7.10  | -328.7      | 7.50                                | -325.5      | 7.43                                   | -358.6      | 8.17                           | -77.8       |
| 08/16/16               | 5.0   | 2.73         | 472.7       | 8.66                                   | -290.1      | 7.27  | -339.0      | 7.23                                | -279.0      | 7.31                                   | -349.5      | 8.41                           | -189.6      |
| 08/24/16               | 5.0   | 2.80         | 461.5       | 8.11                                   | -313.8      | 7.16  | -334.6      | 6.88                                | -275.0      | 7.19                                   | 295.0       | -                              | -           |
| 08/31/16               | 4.5   | 2.43         | 493.3       | 7.89                                   | -313.0      | 7.08  | -323.8      | 7.11                                | -295.7      | 7.45                                   | -391.9      | -                              | -           |
| 09/07/16               | 4.8   | 2.84         | 444.3       | 8.25                                   | -319.7      | 7.45  | -328.7      | 7.72                                | -302.2      | 7.53                                   | -312.7      | -                              | -           |
| 09/12/16 <sup>7</sup>  | 4.5   | 2.59         | 497.7       | 8.24                                   | -285.1      | 7.38  | -300.5      | 7.72                                | -281.9      | 7.27                                   | -311.2      | 8.37                           | -95.4       |
| 09/20/16               | 5.0   | 2.15         | 500.9       | 7.67                                   | -296.1      | 7.02  | -303.8      | 7.26                                | -251.5      | 6.93                                   | -299.4      | -                              | -           |
| 09/28/16               | 4.5   | 2.38         | 442.5       | 8.15                                   | -317.8      | 7.52  | -353.0      | 7.31                                | -275.7      | 7.40                                   | -373.8      | -                              | -           |
| 10/06/16               | 4.9   | 2.69         | 425.8       | 8.32                                   | -281.3      | 7.38  | -296        | 7.78                                | -267.1      | 7.26                                   | -293.3      | -                              | -           |
| 10/13/16               | 4.5   | 2.6          | 435.7       | 9.96                                   | -361.9      | 7.57  | -364.3      | 7.47                                | -287.1      | 7.45                                   | -349.4      | 8.03                           | 105.3       |
| 10/20/16               | 5.0   | 2.18         | 463.8       | 8.06                                   | -298.2      | 7.36  | -356.7      | 7.70                                | -302.5      | 7.50                                   | -370.1      | 8.33                           | -142.5      |
| 11/08/16               | 4.8   | 2.56         | 417.2       | 9.04                                   | -386.7      | 7.39  | -370.1      | 7.35                                | -281.7      | 7.30                                   | -376.2      | 7.77                           | 59.2        |
| 12/02/16               | 4.5   | 2.13         | 453.2       | 7.68                                   | -297.3      | 7.11  | -295.1      | 7.44                                | -290.9      | 7.01                                   | -333.4      | 7.58                           | -208.1      |
| 1/6/2017 <sup>11</sup> | 5.0   | 0.95         | 495         | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.77                           | -204.7      |
| 02/01/17               | 5.5   | 2.77         | 425.5       | 8.98                                   | -293.7      | 8.50  | -341.9      | 8.23                                | -386.9      | 8.24                                   | -367.9      | 7.44                           | -231.9      |
| 03/21/17               | 15.0  | 2.72         | 273.5       | -                                      | -           | -   | -           | 9.64                                | -62.5       | -                                      | -           | 6.84                           | -13.5       |
| 04/10/17               | 28.0  | 2.84         | 379.1       | -                                      | -           | -   | -           | 6.75                                | -159.0      | -                                      | -           | 6.36                           | -23.9       |
| 04/12/17               | 25.5  | 1.98         | 440         | 7.46                                   | -391.2      | 6.75  | -176.6      | 7.99                                | -227.8      | 6.57                                   | -212.5      | 5.73                           | -114.0      |
| 04/21/17               | 32.3  | 2.92         | 427.1       | 7.23                                   | -110.2      | 6.42  | -191.8      | 6.71                                | -7.3        | 6.43                                   | -233.8      | 6.26                           | 16.7        |
| 04/26/17               | -   | 2.97         | 403.1       | 7.27                                   | -293.4      | 6.92  | -138.2      | 6.44                                | 89.3        | 6.53                                   | -214.6      | 6.75                           | 40.6        |
| 04/28/17               | 36.4  | -            | -           | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | -                              | -           |
| 05/03/17               | 30.0  | 2.93         | 446.6       | 8.32                                   | -229.2      | 7.68  | -228.7      | 8.32                                | -29.8       | 6.94                                   | -265.8      | 6.48                           | 68.8        |
| 05/11/17               | 26.0  | 2.76         | 479.7       | 8.76                                   | 212         | 7.80  | -301.7      | 8.89                                | -122.9      | 7.24                                   | -269.6      | 7.27                           | 2.1         |

**TABLE 2**  
**ASPEN SEEP BIOREACTOR TREATMENT SYSTEM - RECENT FLOW, pH, AND ORP FIELD MEASUREMENTS**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Date     | Aspen Seep Bioreactor Influent <sup>1</sup> |              |             | Manhole 1 or 2<br>(Biocell 1 Influent) |             | Manhole 4 or 5<br>(Biocell 1 Effluent/Biocell 2 Influent) |             | Manhole 6<br>(NaOH dosing location) |             | Manhole 7 or 9<br>(Biocell 2 Effluent) |             | Aspen Seep Bioreactor Effluent |             |
|----------|---|--------------|-------------|--|-------------|---|-------------|-------------------------------------|-------------|--|-------------|--------------------------------|-------------|
|          | Flow<br>(gpm)                               | pH<br>(s.u.) | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)  | ORP<br>(mV) | pH<br>(s.u.)                        | ORP<br>(mV) | pH<br>(s.u.)                           | ORP<br>(mV) | pH<br>(s.u.)                   | ORP<br>(mV) |
| 05/12/17 | -   | 2.84         | 365.8       | -                                      | -           | -   | -           | -                                   | -           | -                                      | -           | 7.37                           | 77.2        |
| 05/18/17 | -   | 2.95         | 357.2       | 8.16                                   | -332.2      | 7.23  | -332.3      | 8.12                                | -55.4       | 7.01                                   | -325.4      | -                              | -           |
| 05/24/17 | -   | 2.88         | 467.9       | 8.40                                   | -289.4      | 7.52  | -296.5      | 8.81                                | -261.9      | 6.90                                   | -289.9      | 6.52                           | -8.5        |

Notes

<sup>1</sup> Aspen Seep Bioreactor influent flow rate measurements are field measurements collected with a graduated bucket and stop watch.

<sup>2</sup> Low pH measurements due to power outage and associated chemical pump downtime during the inverter failure on 11/29/10.

<sup>3</sup> Low pH measurements due to increase in system flow rates; chemical dosing rates lagged behind these system flow rate increases and were unable to prevent decrease in system pH.

<sup>4</sup> Field measurements at intermediate bioreactor manholes were not collected when recirculation operations were interrupted due to sludge dewatering operations, biocell flushing, or other maintenance activities.

<sup>5</sup> ORP measurements may be inaccurate due to probe calibration issues.

<sup>6</sup> Low pH measurements due to a power outage and associated chemical pump shutdown.

<sup>7</sup> Effluent parameters were collected at the sludge dewatering filtrate discharge.

<sup>8</sup> High ORP measurements in manholes due to recirculation system downtime.

<sup>9</sup> Effluent only parameters were collected during effluent launder screen repairs.

<sup>10</sup> Influent only parameters were collected during Aspen solids management.

<sup>11</sup> Influent pH measured in the field was low. Influent pH measured by the laboratory was 2.4 s.u. Field parameters were only measured at influent and effluent due to time constraints.

Abbreviations

"-" - not measured, not recorded, or bioreactor operation did not have flow at given location on the specified date.

gpm - gallons per minute

mV - millivolts

ORP - oxidation/reduction potential

s.u. - standard unit

**TABLE 3**  
**CHANNEL UNDERDRAIN, DELTA SEEP, AND HDS TREATMENT PLANT - FLOW RATES**  
**MAY 2017 MONTHLY SUMMARY**  
**Draft - Provisional Data**

| Date                                  | Delta Seep Recorded Flow <sup>1</sup> |           | Channel Underdrain Recorded Flow <sup>1</sup> |           | Treated Water Discharge from HDS Treatment Plant Recorded Flow <sup>1,2</sup> |           |
|---------------------------------------|---------------------------------------|-----------|---|-----------|---|-----------|
|                                       | (gpm)                                 | (gallons) | (gpm)   | (gallons) | (gpm)   | (gallons) |
| 05/01/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/02/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/03/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/04/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/05/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/06/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/07/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/08/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/09/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 05/10/17                              | NA                                    | NA        | NA  | NA        | NA  | NA        |
| 5/11/2017 <sup>3,4,5</sup>            | 35.46                                 | 27,661    | 44.78   | 34,930    | 97.94   | 55,825    |
| 5/12/2017 <sup>5</sup>                | 35.46                                 | 45,748    | 44.78   | 57,769    | 71.57   | 92,327    |
| 5/13/2017 <sup>5</sup>                | 33.67                                 | 46,469    | 45.01   | 62,110    | 78.93   | 54,226    |
| 5/14/2017 <sup>5</sup>                | 33.46                                 | 54,210    | 45.74   | 74,096    | 76.98   | 124,713   |
| 5/15/2017 <sup>5</sup>                | 32.80                                 | 46,248    | 46.17   | 65,105    | 85.53   | 120,603   |
| 5/16/2017 <sup>5</sup>                | 32.41                                 | 46,677    | 47.16   | 67,906    | 102.07  | 146,982   |
| 5/17/2017 <sup>5</sup>                | 31.73                                 | 43,308    | 47.56   | 64,923    | 105.45  | 143,939   |
| 5/18/2017 <sup>5</sup>                | 27.60                                 | 40,027    | 42.79   | 62,040    | 89.74   | 130,125   |
| 5/19/2017 <sup>5</sup>                | 28.49                                 | 39,455    | 45.91   | 63,591    | 102.28  | 113,556   |
| 5/20/2017 <sup>5</sup>                | 27.98                                 | 42,109    | 46.53   | 70,022    | 99.12   | 149,181   |
| 5/21/2017 <sup>5</sup>                | 28.39                                 | 39,890    | 48.17   | 67,674    | 80.53   | 113,143   |
| 5/22/2017 <sup>5</sup>                | 26.92                                 | 39,572    | 45.00   | 66,156    | 82.43   | 121,179   |
| 5/23/2017 <sup>5</sup>                | 25.00                                 | 37,748    | 44.38   | 67,014    | 66.28   | 100,077   |
| 5/24/2017 <sup>5</sup>                | 26.08                                 | 35,082    | 46.98   | 63,189    | 70.16   | 94,371    |
| 5/25/2017 <sup>5</sup>                | 25.39                                 | 39,478    | 46.12   | 71,716    | 68.20   | 106,044   |
| 5/26/2017 <sup>5</sup>                | 24.98                                 | 35,224    | 46.17   | 65,104    | 68.45   | 96,511    |
| 05/27/17                              | 23.54                                 | 33,892    | 46.06   | 66,326    | 65.66   | 94,550    |
| 05/28/17                              | 23.90                                 | 34,413    | 46.67   | 67,202    | 70.00   | 100,797   |
| 05/29/17                              | 23.81                                 | 34,283    | 46.72   | 67,274    | 70.00   | 100,798   |
| 05/30/17                              | 23.39                                 | 33,681    | 46.59   | 67,091    | 54.33   | 78,231    |
| 05/31/17                              | 23.36                                 | 33,643    | 46.77   | 67,344    | 69.97   | 100,756   |
| Average Flow Rate on Total Discharged | 27.92                                 | 801,157   | 46.06   | 1,358,582 | 79.79   | 2,182,109 |

**Notes**

1. DS, CUD, and Treated Water Discharge recorded flows are calculated from flow totalizer volume measurements.
2. The operational flow rate is reported. Water discharge does not always occur 24 hours per day.
3. Discharge from the HDS Treatment Plant started on May 11, 2017 at 14:30.
4. CUD and DS capture and conveyance were started at 11:54 and 11:37.
5. Flow rates calculated from recorded totalizer readings.

**Abbreviations**

CUD - Channel Underdrain

DS - Delta Seep

gpm - gallons per minute

HDS - High Density Sludge

NA - not applicable

**TABLE 4**  
**HIGH DENSITY SLUDGE TREATMENT PLANT - OPERATIONAL DATA SUMMARY**  
**MAY 2017 MONTHLY SUMMARY**  
Draft - Provisional Data

| Reporting Period         | Treated Water Discharged (gallons) | Lime Consumed (kilograms) | Diesel Fuel Consumed (gallons) | Flocculant Consumed (kilograms) | Sludge Wasted (gallons) | Freshwater Consumed (gallons) |
|--------------------------|------------------------------------|---------------------------|--------------------------------|---------------------------------|-------------------------|-------------------------------|
| April 1 - April 30, 2016 | 0                                  | 0                         | 1,305                          | 0                               | 0                       | 0                             |
| May 1 - May 31, 2017     | 2,182,109                          | 11,840                    | 2,608                          | 8.7                             | 16,700                  | 4,079                         |

**TABLE 5**  
**HIGH DENSITY SLUDGE TREATMENT PLANT**  
**POND 4 INITIAL CHARACTERIZATION RESULTS<sup>1</sup>**  
**MAY 2017 MONTHLY SUMMARY**

Draft - Provisional Data

| Parameter                | Basis     | April 25, 2017<br>239HDSP1702<br>HDS Pond 4 P1<br>(mg/L) | April 25, 2017<br>239HDSP2703<br>HDS Pond 4 P2<br>(mg/L) | April 25, 2017<br>239HDSP3704<br>HDS Pond 4 P3<br>(mg/L) | April 25, 2017<br>239HDSP4705<br>HDS Pond 4 P4<br>(mg/L) | Maximum<br>Discharge<br>Criteria <sup>2</sup><br>(mg/L) | Average<br>Discharge<br>Criteria <sup>2</sup><br>(mg/L) |
|--------------------------|-----------|--|--|--|--|---|---|
| pH (s.u.)                | Field     | 3.40   | 3.40   | 3.44   | 3.48   | -   | 6.0 - 9.0   |
| Aluminum                 | Dissolved | 30   | 29   | 29   | 30   | 4.0   | 2.0   |
| Arsenic                  | Dissolved | 0.0014   | 0.00092 J  | 0.0011   | 0.0014   | 0.34  | 0.15  |
| Cadmium                  | Dissolved | 0.0039   | 0.0038   | 0.0036   | 0.0037   | 0.009   | 0.004   |
| Calcium                  | Dissolved | 160  | 160  | 160  | 160  | -   | -   |
| Chloride                 | Total     | 1.2  | 1.1  | 1.3  | 1.3  | -   | -   |
| Chromium                 | Dissolved | 0.011  | 0.011  | 0.010  | 0.010  | 0.97  | 0.31  |
| Copper                   | Dissolved | 0.37   | 0.35   | 0.35   | 0.34   | 0.03  | 0.02  |
| Hardness                 | Dissolved | 600  | 590  | 600  | 590  | -   | -   |
| Iron                     | Dissolved | 2.9  | 2.8  | 2.6  | 2.7  | 2.0   | 1.0   |
| Lead                     | Dissolved | < 0.001  | < 0.001  | < 0.001  | < 0.001  | 0.136   | 0.005   |
| Magnesium                | Dissolved | 47   | 47   | 47   | 47   | -   | -   |
| Nickel                   | Dissolved | 0.46   | 0.45   | 0.44   | 0.44   | 0.84  | 0.094   |
| Selenium                 | Total     | 0.011  | 0.011  | 0.011  | 0.011  | NP  | 0.005   |
| Sulfate                  | Total     | 800  | 790  | 810  | 790  | -   | -   |
| Zinc                     | Dissolved | 0.20   | 0.19   | 0.20   | 0.19   | 0.21  | 0.21  |
| Acidity                  | Total     | 210  | 220  | 220  | 220  | -   | -   |
| Alkalinity (Bicarbonate) | Total     | < 4.8  | < 4.8  | < 4.8  | < 4.8  | -   | -   |
| Alkalinity (Carbonate)   | Total     | < 2.4  | < 2.4  | < 2.4  | < 2.4  | -   | -   |
| Alkalinity (Hydroxide)   | Total     | < 1.4  | < 1.4  | < 1.4  | < 1.4  | -   | -   |
| Alkalinity (Total)       | Total     | < 4.0  | < 4.0  | < 4.0  | < 4.0  | -   | -   |
| Total Dissolved Solids   | Total     | 1300   | 1200   | 1200   | 1200   | -   | -   |
| Total Suspended Solids   | Total     | < 10   | < 10   | < 10   | < 10   | -   | -   |

Notes:

1. Initial characterization of Pond 4 was performed during spring commissioning by samples from four discrete locations (P1, P2, P3, and P4) situated at the northeast, southeast, southwest, and northwest locations around the pond perimeter.

Abbreviations

< - Constituents that were not detected are listed as "<" and the reporting limit is shown.

J - Results noted with "J" are an estimated value or were less than the reporting limit but greater than or equal to the method detection limit.

mg/L - milligrams per liter

s.u. - standard unit

**TABLE 6**  
**HIGH DENSITY SLUDGE TREATMENT PLANT - COMPLIANCE SAMPLE RESULTS**  
**MAY 2017 MONTHLY SUMMARY**  
 Draft - Provisional Data

| Parameter                | Basis     | May 12, 2017<br>234HDSEFF706<br>HDS Effluent <sup>3</sup><br>(mg/L) | Maximum<br>Discharge<br>Criteria <sup>2</sup><br>(mg/L) | Average<br>Discharge<br>Criteria <sup>2</sup><br>(mg/L) |
|--------------------------|-----------|---|---|---|
| pH (s.u.) <sup>1</sup>   | Field     | 8.45  | -   | 6.0 - 9.0   |
| Aluminum                 | Dissolved | 1.4   | 4.0   | 2.0   |
| Arsenic                  | Dissolved | 0.0024  | 0.34  | 0.15  |
| Cadmium                  | Dissolved | < 0.001   | 0.009   | 0.004   |
| Calcium                  | Dissolved | 520   | -   | -   |
| Chloride                 | Total     | 1.3   | -   | -   |
| Chromium                 | Dissolved | < 0.002   | 0.97  | 0.31  |
| Copper                   | Dissolved | 0.0014 J  | 0.026   | 0.016   |
| Hardness                 | Dissolved | 1500  | -   | -   |
| Iron                     | Dissolved | < 0.10  | 2.0   | 1.0   |
| Lead                     | Dissolved | < 0.001   | 0.136   | 0.005   |
| Magnesium                | Dissolved | 49  | -   | -   |
| Nickel                   | Dissolved | 0.016   | 0.84  | 0.094   |
| Selenium                 | Total     | <b>0.010</b>  | NP  | 0.005   |
| Sulfate                  | Total     | 1400  | -   | -   |
| Zinc                     | Dissolved | 0.0039J   | 0.21  | 0.21  |
| Acidity                  | Total     | < 2.0   | -   | -   |
| Alkalinity (Bicarbonate) | Total     | 18  | -   | -   |
| Alkalinity (Carbonate)   | Total     | < 2.4   | -   | -   |
| Alkalinity (Hydroxide)   | Total     | < 1.4   | -   | -   |
| Alkalinity (Total)       | Total     | 15  | -   | -   |
| Total Dissolved Solids   | Total     | 1,700   | -   | -   |
| Total Suspended Solids   | Total     | 12  | -   | -   |

Notes:

1. pH values are field measurements and are reported in standard units.
2. Discharge criteria and basis for maximum and average values are listed in the Request for Approval of Modification to the Removal Action at the Leviathan Mine Memorandum (U.S. EPA, 2008).
3. **Bold** values are above the maximum or average discharge criteria.

Abbreviations

- U - Constituents that were not detected are listed as "<" and the reporting limit is shown.
- J - Results noted with "J" are an estimated value or were less than the reporting limit but greater than or equal to the method detection limit.
- mg/L - milligrams per liter
- NP - Not Promulgated
- s.u. - standard unit